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SECTION 2
UTILITY EXCAVATION, TRENCHING, AND BACKFILLING

2.1 GENERAL

The provisions set forth in this section shall be applicable to all underground water, sewer and reuse piping installations, regardless of location, unless prior approval is received from the City for special design consideration.

2.2 MATERIALS

2.21 Sheeting and Bracing

A) No wood sheeting shall be left in place.

B) Steel sheeting to be left in place shall be as specified in ASTM Designation A328.

2.3 WORKMANSHIP

2.31 Trench Dimensions

The minimum width of the trench shall be equal to the outside diameter of the pipe at the joint plus 8 inches for unsheeted trench, or 12 inches for sheeted trench, and the maximum width of trench, measured at the top of the pipe, shall not exceed the outside pipe diameter plus 2 feet, unless otherwise shown on the drawing details, or approved by the City.

2.32 Utility Bedding

A) Class B (Minimum Utility Bedding): The bottom of the trench shall be shaped 'to provide a firm bedding for the pipe. The pipe shall be firmly bedded in undisturbed soil, or hand shaped so that the pipe will be in continuous contact therewith for its full length.

B) Class A (Special Utility Bedding): Should special bedding be required due to depth of cover, impact loadings, or other conditions, "Class A" bedding methods shall receive prior approval by the City.

2.33 Unsuitable Material Below Trench Grade

Soil unsuitable for a proper foundation encountered at or below trench grade, such as muck or other deleterious material, shall be removed for the full width of the trench and to the depth required to reach suitable foundation material, unless special design considerations received prior approval from the City. Backfilling below trench grade shall be in compliance with the applicable provisions of subsection 2.41 "Backfill".

2.34 Extra Utility-Bedding Material

When rock or other non-cushioning material is encountered at trench grade, excavation shall be extended to 6 inches below the outside of the bottom of the utility, and a cushion of sand to fully cover the pipe or fittings to a minimum depth of 12" shall be provided.

2.35 Sheeting and Bracing

In order to prevent damage to property, injury to persons, erosion, cave-ins, or excessive trench widths, adequate sheeting and bracing shall be provided in accordance with standard practice and in accordance with all safety, protection of property, and other applicable laws and regulations, including the Florida Safe Trench Act.

2.36 Excavated Material

Excavated material to be used for backfill shall be neatly deposited at the sides of the trenches where space is available. Where stockpiling of excavated material is required, the contractor shall be responsible for obtaining the sites to be used.

2.37 Material Disposal

Excess, unsuitable, or cleared or grubbed material resulting from the utility installation shall be removed from the work site and disposed of at locations secured by the contractor. Excess excavated material shall be spread on the disposal site and graded in a manner to drain properly and not disturb existing drainage conditions.

2.38 Borrow

Should there be insufficient satisfactory material from the excavations to meet the requirements for fill material, borrow shall be obtained from pits secured by the contractor and with material approved by the City..

2.39 Dewatering

Utilities shall be laid "in the dry" unless otherwise approved. Dewatering systems shall be utilized in accordance with good standard practice and must be efficient enough to lower the water level in advance of the excavation and maintain it continuously to keep the trench bottom and sides firm and dry. Any dewatering equipment to be utilized in a residential area shall be equipped with a sound attenuating enclosure and approved by the City.

2.40 Obstructions

It shall be the contractor's responsibility to acquaint himself with all existing conditions and to locate all structures and utilities along the proposed utility alignment in order to avoid conflicts.

Where actual conflicts are unavoidable, work shall be coordinated with the facility owner and performed so as to cause as little interference as possible with the service rendered by the facility disturbed.

2.41 Backfill

A) Backfill material shall be clean earth fill composed of sand, or other City approved fill.

B) When trenches are cut in pavements or areas to be paved, compaction as determined by AASHTO Specification T-180, shall be, for each 12 inch backfill lift, equal to 98 percent of maximum density, with compaction in other areas, not less than 95 percent of maximum density. Density tests shall be provided for trenches within pavement, across roads and areas adjacent to proposed building structures.

Backfilling of pipe trench or under and around structures shall be, for each 12 inch backfill lift, compacted to 98 percent of maximum density as determined by AASHTO Specification T-180.

One compaction test shall be carried out for each 300 linear feet of pipe and for every 100 square feet of backfill under and around structures, and pavement as a minimum.

C) If, in the opinion of the City, densities are questionable, additional density tests for determination of compliance with the above specified compaction requirements shall be made by a testing laboratory approved by the City at the expense of the contractor. Test locations will be determined by the City.

D) If any test results are unsatisfactory, the contractor shall re-excavate and re-compact the backfill at his expense until the desired compaction is obtained.

E) Protective concrete slabs shall be installed over the top of trenches, where required, to protect the installed pipe against excessive loads across roadways and river/swamp areas, as required by the City.

F) Existing sidewalks and driveways removed, disturbed, or destroyed by construction, shall be replaced or repaired by the contractor at his expense.

G) All water, reuse and sewer lines must have a continuous metallic tracing tape placed 18" above them, labeled with the appropriate designation of pipe use.

H) All watermains, reuse mains and sewer force mains must have a continuous type TWH PVC insulated copper conductor #14 solid single strand wire strapped to the top of pipe every ten (10) feet and pulled up into all valve boxes and all meter boxes. All wires shall be spliced and taped back 12 inches from connection point to insure electrical continuity for the entire length of constructed pressure main.

I) No pipe or piping shall be backfilled until inspected and approved by the City.

J) All piping shall be laid with the lettering facing up for identification purposes.

2.42 Roadway and Pavement Restoration

Open cuts of City streets is expressly prohibited. However, hardship waivers may be granted at the sole discretion of the Public Works Director, in accordance with the requirements of this section and Section 12 of these specifications. Restoration shall be as required by the Public Works Director, taking into account factors such as age of existing roadway, density of traffic, location, etc.

A) Pavement or roadway surfaces cut or damaged shall be replaced by the contractor in equal or better condition than the original, including stabilization, base course, surface course, curb and gutter, or other appurtenances. The contractor shall obtain the necessary permits and all applicable authorizations from the proper agencies prior to any roadway work. Additionally, the contractor shall provide advance notice to the appropriate authority and local emergency services agencies, as required, prior to construction operations.

B) Restoration shall be in accordance with requirements set forth by the City. The

materials of construction and method of installation, along with the proposed restoration design for items not referred to or specified herein, shall receive prior approval from the City.

C) Where existing pavement is removed, the surfacing shall be mechanical saw cut prior to trench excavation, leaving a uniform and straight edge, with minimum disturbance to the remaining adjacent surfacing. The width of cut for this phase cf existing pavement removal shall be minimal.

D) Immediately following the specified backfilling and compaction, a temporary sand seal coat surface shall be applied to the cut areas. This temporary surfacing shall provide a smooth traffic surface with the existing roadway and shall be maintained until final restoration.

E) Density tests shall be provided for trenches in pavement across roadways as specified in Section 2.41.

2.43 Protection and Restoration of Property

During the course of construction, the contractor shall take special care and provide adequate protection in order to minimize damage to vegetation, surfaced areas, and structures within the construction right-of-way, easement or site, and take full responsibility for repair or replacement thereof.

2.44 Cleanup

Work site cleanup and property restoration shall follow behind construction operations without delay. Some of this clean-up will be done on a daily basis, as needed, usually at the end of the work day.

(Reserved)